

**Abstract**

A photonic circuit with the ability to precisely select a frequency is disclosed. The temperature of a resonator in the circuit is monitored by a sensor. Data  
5 regarding the resonator's temperature is transmitted to a processor. The processor either energizes or varies the amount of current to a heater element that maintains the temperature of the resonator at a precise level. By precisely maintaining the temperature of the resonator, the refractive index of the resonator can be precisely maintained, and a particular frequency of light can be selected. By the same token, by precisely changing  
10 the temperature of the resonator, the circuit can be variably tuned to select any frequency of light.